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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
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(54) Title: REGULATION OF HUMAN TRANSIENT RECEPTOR POTENTIAL CHANNEL

(57) Abstract: Reagents which regulate human transient receptor potential channel and reagents which bind to human transient receptor potential channel gene products can play a role in preventing, ameliorating, or correcting dysfunctions or diseases including, but not limited to, urinary incontinence, overactive bladder, benign prostatic hyperplasia, lower urinary tract syndromes, and CNS disorders.



03/087158

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Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala 50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp.
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp 85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser 100 105 110 Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp 120 . His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile 150 Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu 215 Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu 265 Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly 280 Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val 330 Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe 345 Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val 380 -Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser . 395 . 390 Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn 410 . 405 Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp . . 440 Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe

455

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Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile 840 835

Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu 855

Phe Ala Val Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu 870

Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr 890

Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly 905

Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys

Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu 935

Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile 955 945

Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr 965

Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu 985

Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val 1000

Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys

Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp 1030

Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val 1050 1045 ·

Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg 1065

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Glu 65	Asn	Val	Cys	Lys	Cys 70	Gly	Tyr	Ala	Gln	Ser 75	Gln	His	Met	Glu (Gly 80
Thr	Gln	Ile	Asn	Gln 85	Ser	Glu	Lys	Trp	naA 90	Tyr	Гув	Lys	His	Thr 95	Lys
Glu	Phe	Pro	Thr 100	Asp	Ala	Phe	Gly	Asp 105	Ile	Gln	Phe	Glu	Thr 110	Leu	Gly
_	_	115		Tyr	•		120				•	125			•
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145				Thr	150					155			•		160
				Phe 165					170		-			175	
			180	-			•	185			•		190		
		195	;	Arg			200					205			
	210)		Gly		215					220			•	
225) Asn	230					235	•				240
			•	245				•	250					255	Asn,
			260)	-			265			•	•	270		Thr
		27	5				280)				285	•	•	Arg
	29	0				295	5				300)			Phe
30	5				310)		٠		31!	5			٠	320
				325	5				330	D				332	
			34	0	•			345	5				351	J	Ser
		35	5				36	0		•		36	5		Arg
	3.7	0		•		37	5				.38	O			ı Ile
38	5				39	0.				39	5	•			a Gly 400
As	p Gl	lu Il	le Va	1 Se 40		n Al	a Il	e Se	r. Ty 41	r Al	a Le	и Ту	r Ly	s Ala 41	a Phe 5

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Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu
755 760 765

Leu Val Leu Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr Phe Thr Asp Leu Trp Asn Val 790 Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg 810 Leu His Ser Ser Asn Lys Ser Ser Leu Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu Arg Leu Ile His Ile Phe Thr 835 840 Val Ser Arg Asn Leu Gly Pro Lys Ile Ile Met Leu Gln Arg Met Leu 855 Ile Asp Val Phe Phe Phe Leu Phe Leu Phe Ala Val Trp Met Val Ala 875 . Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe Ala His 920 Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val 955 Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val Phe Ala Tyr Phe Tyr Met Val 1015 Val Lys Lys Cys Phe Lys Cys Cys Cys Lys Glu Lys Asn Met Glu Ser 1030 . Ser Val Cys Cys Phe Lys Asn Glu Asp Asn Glu Thr Leu Ala Trp Glu 1050 Gly Val Met Lys Glu Asn Tyr Leu Val Lys Ile Asn Thr Lys Ala Asn 1065 Asp Thr Ser Glu Glu Met Arg His Arg Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys Glu Ile Ala Asn Lys Ile Lys

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185

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Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala 50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp 65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp 120 His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Thr Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro 230 Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn 250 Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu 265 Glu Lys His Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val Glu Gly Ser Gly Arg Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val 330 Glu Asp Ala Pro Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe . 345 Leu Pro Arg Thr Val Ser Arg Leu Ser Glu Glu Glu Thr Glu Ser Trp 360 Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val · 375 Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu Leu Clu Trp Asn Gln Leu Asp Leu 425 . Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp

440

435

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Ser 545		Ile	Thr	Ārg	His 550	Pro	Leu	Gln	Ala	Leu 555	Phe	Ile	Trp	Ala	Ile 560	
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Glı	n Hi	s Phe	e Th:		Gln	Pro	Gly	Val 665	Glr	n Ası	Phe	e Lev	Ser 670	Lys	Gln	
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- Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu 805 . 810 815
- Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu 820 825 830
- Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile 835 840 845
- Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Leu Phe Leu 850 860
- Phe Ala Val Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu 865 870 875 880
- Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr 885 890 895
- Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly 900 905 910
- Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys 915 920 925
- Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu 930 935 940
- Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile 945 950 955 960
- Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr 965 970 975
- Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu 980 985 990
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- Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp 1025 1030 1035 1040
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- Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg 1060 1065 1070
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 10 15

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser 105 · Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp 120 His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys 135 Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp 200 Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu 215 Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu 265 Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly 280 Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp 360 Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val

Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu Leu Glu Trp Asn Gln Leu Asp Leu 425 Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp 440 Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe 455 Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu 505 Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr 615 Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln 665 Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala 715 . Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val 760 Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu 810 Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu 820 Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Leu Phe Leu 855 Phe Ala Xaa Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr 890 Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu . 985 Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val . 1000 Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys 1015 Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp 1030 Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg 1065

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys

Glu Ile Ala Asn Lys Ile Lys 1090 1095 <210> 17 <211> 652 <212> PRT <213> Homo sapiens

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu . 20 25 30

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe 35 40 45

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala
50 55 60

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp
65 70 75 80

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp 85 90 95

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp 115 120 125

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys 130 135 140

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His 165 170 175

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile 180 185 190

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp 195 200 205

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu 210 215 220

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro 225 230 240

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn 255

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu 260 265 270

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly 275 . 280 285

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Lys Glu Thr Leu 290 295 300

Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val 305 310 315

Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe 340 345 350 Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu, Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser 390 . Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe 455 Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys 520 Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile 550 Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg . 570 Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu 585 Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu 630 Ala Trp Gly Gly Leu Glu His His His His His His

<210> 18 <211> 1095 <212> PRT <213> Homo sapiens

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Ser	Ser	Ala	Ser ·20	Arg	Ser	Thr	qaA	Leu 25	Ser	Tyr	Ser	Glu	Ser 30	Asp	Leu
Val	Asn	Phe 35	Ile	Gln	Ala	Asn	Phé 40	Lys	ГÀЗ	Arg	Glu	Сув 45	Val	Phe	Phe
Thr	Ьу в 50	Asp	Ser	. FAs	Ala	Thr 55	Glu	Asn	val	Cys ·	Lys 60	Cys	Gly	Tyr	Ala
Gln _. 65	Ser	Gln	His	Met	Glu 70	Gly	Thr	Gln	Ile	Àsn 75	Gln	Ser	Glu	ГЛЗ	Trp 80
Asn	Tyr	Lys	. Lys	His 85	Thr	Ьув	Glu	.Phe	Pro 90	Thr	Asp	Ala	Phe	Gly 95	Asp ·
Ile	Gln	Phe	Glu 100		Leu	Gly	Гуs	Lys 105	Gly	Lys	Tyr	Ile	Arg 110	Leu	Ser
Сув	Asp	Th:		Ala	Glu	Ile	Leu 120	Tyr	Glu	Leu	Leu	Thr 125	Gln	His	Trp
His	Leu 130		s Thi	r Pro	naA o	Leu 135	Val	. Ile	Sei	val	Thr 140	Gly	Gly -	Ala	Lys
Asn 145		Ala	a Let	ь Гу	9 Pro	Arg	Met	: Arg	Ly	11e 155	Phe	Ser	Arg	Leu	Ilė 160
Tyr	Ile	Ala	a Gl	n Ser 16	r Lys 5	. Gly	Ala	Trp	170	e Leu O	Thr	Gly	Gly	Thr 175	His
Туг	Gly	, Le	u Me 18		в Туг	: İle	Gly	/ Gli 189	ı Vai	l Va:	l Arg	Asr	190	Thr	Ile
Ser	Arg	9 Se 19		r Gl	u Gl	ı Ası	1 11e	e Val	L Al	a Il	e Gly	7 Ile 205	e Ala	Ala	Trp
Gl	/ Met		1 Se	r As	n Arg	g Ası 21!	o Thi	ŗ Lei	ı Il	e Ar	g Ası .220	Cys	Asp	Ala	Glu
Gl ₃ 229		r Ph	e Le	u Al	a Gl: 23		r Le	u Me	t As	p As 23	p Pho	e Thi	r Arg	g Asp	240
Let	ц Ту:	r Il	e Le	u As 24		n As	n Hi	s Th	r Hi 25	s Le	u Le	u Lei	u Va	1 Asj 25	Asn 5
Gl	у Су	s Hi	is G] . 26	у Ні 50	s Pr	o Th	r Va	1 Gl 26	u Al 5	a Ly	s Le	u Ar	g As: 27	n Gl: 0	n Leu
Gl	и Гу	s Ty 27	yr II 75	le Se	er Gl	u Ar	g Th 28	r Il	e Gl	n As	p Se	r As 28	n Ty 5	r Gl	y Gly
Ŀу	s Il 29		ro I:	le Va	al Cy	s Ph 29	e Al 5	a Gl	n G	Ly GJ	y G1	у Г у	B Gl	u Th	r Leu
L у 30		a I	le A	sn Ti	ar Se	r Il	.е Ьչ	78 A6	n Ly	ys I] . 31	le Pr L5	о Су	s Va	l Va	1 Val 320
Gl	u Gl	y s	er G		ln II 25	le AJ	a As	sp Va	al I:	le Al	la S∈	r Le	eu Va	1 Gl 33	u Val
Gl	.u As	ap A		eu T 40	hr Se	er Se	er Al	la Va	al L	ys G	lu Ly	rs Le	eu Va	l Ar 50	g Phe

Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val 375 Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp 440 Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe 455 Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr 475 . 470 His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu 505 Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile . 555 545 Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg 5,70 Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu 600 Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr 615 Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu 635 Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro Gly Val Gln Asn Phe Leu Ser Lys Gln Trp Tyr Gly Glu Ile Ser Arg Asp Thr Lys Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu Val Gly Cys Gly Phe Val Ser Phe Arg 695 Lys Lys Pro Val Asp Lys His Lys Lys Leu Leu Trp Tyr Tyr Val Ala

Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Phe Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr 775 Phe Thr Asp Leu Trp Asn Val Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg Leu His Ser Ser Asn Lys Ser Ser Leu Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu 825 Arg Leu Ile His Ile Phe Thr Val Ser Arg Asn Leu Gly Pro Lys Ile 840 Ile Met Leu Gln Arg Met Leu Ile Asp Val Phe Phe Leu Phe Leu 855 Phe Ala Xaa Trp Met Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu 870 Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr . . 885 Glu Pro Tyr Leu Ala Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly 905 Thr Thr Tyr Asp Phe Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile 955 Leu Leu Val Asn Leu Leu Val Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln Val Trp Lys Phe Gln Arg Tyr Phe Leu 985 980 Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val 1000 Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys 1015 Lys Glu Lys Asn Met Glu Ser Ser Val Cys Cys Phe Lys Asn Glu Asp 1035 Asn Glu Thr Leu Ala Trp Glu Gly Val Met Lys Glu Asn Tyr Leu Val 1050 Lys Ile Asn Thr Lys Ala Asn Asp Thr Ser Glu Glu Met Arg His Arg

1065

Phe Arg Gln Leu Asp Thr Lys Leu Asn Asp Leu Lys Gly Leu Leu Lys 1080 1075

Glu Ile Ala Asn Lys Ile Lys 1095 1090

<210> 19

<211> 652

<212> PRT

<213> Homo sapiens

<400> 19

Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr 10

Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu

Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe

Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala

Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp.

Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp

Ile Gln Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser

Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp . 120

His Leu Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys

Asn Phe Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile

Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His

Tyr Gly Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile 185

Ser Arg Ser Ser Glu Glu Asn Ile Val Ala Ile Gly Ile Ala Ala Trp 195

Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu 215

Gly Tyr Phe Leu Ala Gln Tyr Leu Met Asp Asp Phe Thr Arg Asp Pro 235 230

Leu Tyr Ile Leu Asp Asn Asn His Thr His Leu Leu Leu Val Asp Asn 250

Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu 265

Glu Lys Tyr Ile Ser Glu Arg Thr Ile Gln Asp Ser Asn Tyr Gly Gly 280 275

Lys Ile Pro Ile Val Cys Phe Ala Gln Gly Gly Lys Glu Thr Leu 295 Lys Ala Ile Asn Thr Ser Ile Lys Asn Lys Ile Pro Cys Val Val Val 310 Glu Gly Ser Gly Gln Ile Ala Asp Val Ile Ala Ser Leu Val Glu Val 330 Glu Asp Ala Leu Thr Ser Ser Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro Arg Thr Val Ser Arg Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn 410 · 405 Trp Asn Gly Gln Leu Lys Leu Leu Leu Glu Trp Asn Gln Leu Asp Leu 425 Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp 440 Leu Gln Glu Val Met Phe Thr Ala Leu Ile Lys Asp Arg Pro Lys Phe 455 Val Arg Leu Phe Leu Glu Asn Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu Phe Ser Asn His Phe Ser Thr Leu Val 490 Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu . 505 . 500 . Thr Phe Val Trp Lys Leu Val Ala Asn Phe Arg Arg Gly Phe Arg Lys 520 Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val 535 Ser Pro Ile Thr Arg His Pro Leu Gln Ala Leu Phe Ile Trp Ala Ile 555 550 Leu Gln Asn Lys Lys Glu Leu Ser Lys Val Ile Trp Glu Gln Thr Arg 570 Gly Cys Thr Leu Ala Ala Leu Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu 600 Ala Asn Glu Tyr Glu Thr Arg Ala Val Glu Leu Phe Thr Glu Cys Tyr . 615 Ser Ser Asp Glu Asp Leu Ala Glu Gln Leu Leu Val Tyr Ser Cys Glu 630 635 Ala Trp Gly Gly Leu Glu His His His His His His 645

<210> 20 <211> 1104 <212> PRT <213> Homo sapiens <400> 20 Met Ser Phe Arg Ala Ala Arg Leu Ser Met Arg Asn Arg Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr Ser Ser Ala Ser Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Asp Leu Val Asn Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe Thr Lys Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln Phe Glu Thr Leu Gly 105 Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp His Leu Lys Thr Pro Asn Leu 135 Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe Ala Leu Lys Pro Arg 150 Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile Ala Gln Ser Lys Gly Ala Trp Ile Leu Thr Gly Gly Thr His Tyr Gly Leu Met Lys Tyr Ile 185 Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg Ser Ser Glu Glu Asn 200 Ile Val Ala Ile Gly Ile Ala Ala Trp Gly Met Val Ser Asn Arg Asp Thr Leu Ile Arg Asn Cys Asp Ala Glu Gly Tyr Phe Leu Ala Gln Tyr 225 230 235 230 Leu Met Asp Asp Phe Thr Arg Asp Pro Leu Cys Ile Leu Asp Asn Asn 250 His Thr His Leu Leu Leu Val Asp Asn Gly Cys His Gly His Pro Thr Val Glu Ala Lys Leu Arg Asn Gln Leu Glu Lys Tyr Ile Ser Glu Arg 280 Thr Ile Gln Asp Ser Asn Tyr Gly Gly Lys Ile Pro Ile Val Cys Phe 295 Ala Gln Gly Gly Gly Lys Glu Thr Leu Lys Ala Ile Asn Thr Ser Ile 315

Lys Asn Lys Ile Pro Cys Val Val Val Glu Gly Ser Gly Gln Ile Ala 325 Asp Val Ile Ala Ser Leu Val Glu Val Glu Asp Ala Leu Thr Ser Ser 345 Ala Val Lys Glu Lys Leu Val Arg Phe Leu Pro Arg Thr Val Ser Arg 360 Leu Pro Glu Glu Glu Thr Glu Ser Trp Ile Lys Trp Leu Lys Glu Ile Leu Glu Cys Ser His Leu Leu Thr Val Ile Lys Met Glu Glu Ala Gly Asp Glu Ile Val Ser Asn Ala Ile Ser Tyr Ala Leu Tyr Lys Ala Phe Ser Thr Ser Glu Gln Asp Lys Asp Asn Trp Asn Gly Gln Leu Lys Leu 420 Leu Leu Glu Trp Asn Gln Leu Asp Leu Ala Asn Asp Glu Ile Phe Thr Asn Asp Arg Arg Trp Glu Ser Ala Asp Leu Gln Glu Val Met Phe Thr 455 Ala Leu Ile Lys Asp Arg Pro Lys Phe Val Arg Leu Phe Leu Glu Asn 475 Gly Leu Asn Leu Arg Lys Phe Leu Thr His Asp Val Leu Thr Glu Leu . 490 Phe Ser Asn His Phe Ser Thr Leu Val Tyr Arg Asn Leu Gln Ile Ala Lys Asn Ser Tyr Asn Asp Ala Leu Leu Thr Phe Val Trp Lys Leu Val 520 Ala Asn Phe Arg Arg Gly Phe Arg Lys Glu Asp Arg Asn Gly Arg Asp Glu Met Asp Ile Glu Leu His Asp Val Ser Pro Ile Thr Arg His Pro 550 Leu Gln Ala Leu Phe Ile Trp Ala Ile Leu Gln Asn Lys Lys Glu Leu 565 · Ser Lys Val Ile Trp Glu Gln Thr Arg Gly Cys Thr Leu Ala Ala Leu 585 Gly Ala Ser Lys Leu Leu Lys Thr Leu Ala Lys Val Lys Asn Asp Ile Asn Ala Ala Gly Glu Ser Glu Glu Leu Ala Asn Glu Tyr Glu Thr Arg 615 Ala Val Glu Leu Phe Thr Glu Cys Tyr Ser Ser Asp Glu Asp Leu Ala 630 Glu Gln Leu Leu Val Tyr Ser Cys Glu Ala Trp Gly Gly Ser Asn Cys Leu Glu Leu Ala Val Glu Ala Thr Asp Gln His Phe Ile Ala Gln Pro 665 Gly Val Gln Asn Phe Leu Ser Lys Gln Trp Tyr Gly Glu Ile Ser Arg -680

Asp Thr Lys Asn Trp Lys Ile Ile Leu Cys Leu Phe Ile Ile Pro Leu 695 Val Gly Cys Gly Phe Val Ser Phe Arg Lys Lys Pro Val Asp Lys His 705 710 715 720 Lys Lys Leu Leu Trp Tyr Tyr Val Ala Phe Phe Thr Ser Pro Phe Val Val Phe Ser Trp Asn Val Val Phe Tyr Ile Ala Phe Leu Leu Phe 740 745 750 Ala Tyr Val Leu Leu Met Asp Phe His Ser Val Pro His Pro Pro Glu Leu Val Leu Tyr Ser Leu Val Phe Val Leu Phe Cys Asp Glu Val Arg Gln Trp Tyr Val Asn Gly Val Asn Tyr Phe Thr Asp Leu Trp Asn Val 790 Met Asp Thr Leu Gly Leu Phe Tyr Phe Ile Ala Gly Ile Val Phe Arg 810 Leu His Ser Ser Asn Lys Ser Ser Leu Tyr Ser Gly Arg Val Ile Phe Cys Leu Asp Tyr Ile Ile Phe Thr Leu Arg Leu Ile His Ile Phe Thr 840 Val Ser Arg Asn Leu Gly Pro Lys Ile Ile Met Leu Gln Arg Met Leu 855 Ile Asp Val Phe Phe Phe Leu Phe Leu Phe Ala Val Trp Met Val Ala 875 Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr Glu Pro Tyr Leu Ala Met Phe 905 Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe Ala His . . .920 Cys. Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro Leu Val 950 Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu Leu Val 965 Ala Met Phe Gly Tyr Thr Val Gly Thr Val Gln Glu Asn Asn Asp Gln 985 Val Trp Lys Phe Gln Arg Tyr Phe Leu Val Gln Glu Tyr Cys Ser Arg Leu Asn Ile Pro Phe Pro Phe Ile Val Phe Ala Tyr Phe Tyr Met Val Val Lys Lys Cys Phe Lys Cys Cys Cys Lys Glu Lys Asn Met Glu Ser 1035 ·

Ser Val Cys Cys Phe Lys Asn Glu Asp Asn Glu Thr Leu Ala Trp Glu 1045 1050 1055

Gly Val Met Lys Glu Asn Tyr Leu Val Lys Ile Asn Thr Lys Ala Asn 1060 1065 1070

Asp Thr Ser Glu Glu Met Arg His Arg Phe Arg Gln Leu Asp Thr Lys 1075 1080 1085

Leu Asn Asp Leu Lys Gly Leu Leu Lys Glu Ile Ala Asn Lys Ile Lys 1090 1095 1100

<210> 21 <211> 931 <212> PRT <213> Homo sapiens

(213) Nome Suprems

Lys Glu Lys Met Ser Phe Arg Ala Ala Arg Leu Ser Met Arg Asn Arg 20 25 30

Arg Asn Asp Thr Leu Asp Ser Thr Arg Thr Leu Tyr Ser Ser Ala Ser 35 40 45

Arg Ser Thr Asp Leu Ser Tyr Ser Glu Ser Ala Ser Phe Tyr Ala Ala 50 55 60

Phe Ile Gln Ala Asn Phe Lys Lys Arg Glu Cys Val Phe Phe Thr Lys 85 90 95

Asp Ser Lys Ala Thr Glu Asn Val Cys Lys Cys Gly Tyr Ala Gln Ser 100 105 110

Gln His Met Glu Gly Thr Gln Ile Asn Gln Ser Glu Lys Trp Asn Tyr 115 120 125

Lys Lys His Thr Lys Glu Phe Pro Thr Asp Ala Phe Gly Asp Ile Gln 130 135 140

Phe Glu Thr Leu Gly Lys Lys Gly Lys Tyr Ile Arg Leu Ser Cys Asp 145 150 155 160

Thr Asp Ala Glu Ile Leu Tyr Glu Leu Leu Thr Gln His Trp His Leu 165 170 175

Lys Thr Pro Asn Leu Val Ile Ser Val Thr Gly Gly Ala Lys Asn Phe 180 185 190

Ala Leu Lys Pro Arg Met Arg Lys Ile Phe Ser Arg Leu Ile Tyr Ile 195 200 205

Ala Gln Ser Lys Gly Ala Trp lle Leu Thr Gly Gly Thr His Tyr Gly
210 220

Leu Met Lys Tyr Ile Gly Glu Val Val Arg Asp Asn Thr Ile Ser Arg 225 230 235 . 240

Ser _.	Ser	Glu	Glu	Asn 245	Ile	Val	Ala	Ile	Gly 250	Ile	Ala	Ala '	Trp (Gly 255	Met
Val	Ser	Asn	Arg 260	Asp	Thr	Leu	Ile	Arg 265	Asn	Сув	Asp	Ala	Glu (270	Gly	Tyr
Phe	Leu	Ala 275	Gln	Tyr	Leu	Met	Asp 280	дар	Phe	Thr	Arg	Asp 285	Pro	Leu	Tyr
Ile	Leu 290	Asp	Asn	Asn	His	Thr 295	His	Leu	Leu	Leu	Val 300	Asp	Asn	Gly	Сув
His 305	Gly	His	Pro	Thr	Val 310	Glu	Ala	Lys	Leu	Arg 315	Asn	Gln	Leu	Glu	Lys 320
Tyr	Ile	Ser	Glu	Arg 325	Thr	Ile	Gln	Asp	Ser 330	Asn	Tyr	Gly	Gly	Lys 335	Ile
Pro	Ile	Val	Cys 340		Ala	Gln	Gly	Gly 345	Gly	Lys	Glu	Thr	Leu 350	Lys	Ala
Ile	Asn	Thr 355		Ile	Гув	Asn	Lys 360	Ile	Pro	Cys	Val	Val 365	Val	Glu	Gly
Ser	Gly 370		lle	Ala	Asp	Val 375	Ile	Ala	Ser	Leu	Val 380	Glu	Val ·	Ģlu	Asp
Ala 385		Thi	Ser	Ser	Ala 390	Val	Lys	Glu	Lys	395	Val	Arg	Phe	Leu	Pro 400
Arg	Thr	· Val	Ser	Arg 405		Pro	Glu	Glu	410	Thr	Glu	Ser	Trp	Ile 415	ГÀв
Trr	Lev	ı Lyı	420	ı Ile	Lėu	Glu	Сув	Ser 425	His	Lev	Leu	Thr	Val 430	Ile	Lys
Met	: Glu	43		a Gly	Asp	Glu	11e	val	L. Sei	r Ası	a Ala	1le 445	Ser	Tyr	Ala
Let	Ty:	_	s Ala	a Phe	e Ser	Thr 455		Glu	i Gli	n Ası	р Lys 460	Asp	Asn	Trp) Asn
Gl:		n Le	u Ly	s Lei	1 Let 470	ı Lei	ı Glı	ı Trj	aA o	n Gl:	n Lev 5	Asp	Leu	Ala	Asn 480
As	p Gl	u Il	e Ph	e Th:	r Ası	ı Asp	Arg	g Ar	g Tr 49	p Gl	ц Г уя	s Ser	Lys	495	Arg
Le	u Ar	g As	р Th 50	r Il	e Ile	e Glı	n Vai	1 Th: 50	r Tr 5	p Le	u Glu	ı Asr	1 Gly 510	r Arg	Ile.
ГÀ	s Va	l Gl 51		r Ly	s Ası	p Va	1 Th	r As	p Gl	у Ьу	s Ala	525	r Sei	Hi:	s Met
Le	u Va 53		l Le	u Ly	s Se	r Al 53	a As 5 ·	р Ŀe	u Gl	n Gl	u Va 54	l Met O	t Phe	e Th	r Ala
Ъе 54	u Il 5	.e Ly	s As	p Ar	g Pr 55	о Ъ у 0	s Ph	e Va	1 Ar	g Le 55	u Ph	e Le	u Gli	a As	n Gly 560
L€	eu As	n Le	eu Ar	g Ly 56	s Ph	e Le	u Th	r Hi	.s As	sp Va 70	l Le	u Th	r Gl	u Le 57	u Phe 5
Se	er As	n H		ne Se 30	r Th	r Le	u Va	1 Ty 58	71 A1	rg As	n Le	u Gl	n Il 59	e Al O	a Lys
As	sn Se		yr Ai 95	en As	EP Al	a Le	eu Le 60	eu Th	ır Pl	ne Va	al Tr	ъ Гу 60	s Le 5	u Va	l Ala

Asn	Phe 610	Arg	Arg	Gly	Phe .	Arg : 615	Lys (Glu /	Asp .	Arg	Asn 620	Gly .	Arg	Asp	Glü
Met 62 _. 5	Asp	Ile	Glu	Leu	His . 630	Asp '	Val :	Ser _.	Pro	Ile 635	Thr .	Arg	His	Pro	Leu 640
Gln	Ala	Leu	Phe	Ile 645	Trp	Ala	Ile	Leu	Gln 650	Asn	Lys	Lys	Glu	Leu 655	Ser
Lys	Val	Ile	Trp 660	Glu	Gln	Thr	Arg	Gly 665	Сув	Thr	Leu	Ala	Ala 670	Leu	Gly
Ala	Ser	Lys 675	Leu	Leu	Lys ·	Thr	Leu 680	Ala	Lys	Val-	Lys	Asn 685	Asp	Ile	Asn
Ala	Ala 690	Gly	Glu	Ser	Glu	Glu 695	Leu ·	Ala	Asn	Glu	Tyr 700	Glu	Thr	Arg	Ala
Val 705	Gly	Glu	Ser	Thr	Val 710	Trp	Asn	Ala	Val	Val 715	Gly	Ala	Asp	Leu	Pro 720
Сув	Gly	Thr	Asp	Ile 725	Ala	Ser	Gly	Thr	His 730	Arg	Pro	Asp	Gly	Gly 735	Glu
Leu	Phe	Thr	Glu 740		Tyr	Ser	Ser	Asp 745	Glu	qaA	Leú	Ala	Glu 750	Gln	Leu
Leu	Val	Tyr 755		Сув	Glu	Ala	Trp 760	Gly	Gly	Ser	Asn	Сув 765	Leu	Glu	Leu
Ala	Val		Ala	Thr	Asp	Gln 775	His	Phe	Ile	Ala	Gln 780	Pro	Gly	Val	Gln ·
Asn 785		Leu	Ser	Lys	Gln 790	Trp	Tyr	Gly	Glu	795	Ser	Arg	Asp	Thr	800
Asr	Trp	Lys	: Ile	805		Сув	Leu	Phe	1le 810	Ile	Pro	Leu	Val	Gly 815	Cys
Gİ	, Phe	va]	820		arg	Lys	ГÀв	Pro 825	Val	. Àsr	Lys	His	.830	Lys	Leu
Let	ı Try	Ty1 835		r Val	Ala	Phe	Phe 840	Thr	Ser	Pro	Phe	Val 845	. Val	. Phe	e Ser
Trj	Ası 850		l Va	l Phe	e Tyr	11e 855	Ala	Phe	Lev	ı Lev	860	Phe	e Ala	а Туг	val
Le:		u Me	t As	p Phe	e His 870	s Ser	. Val	. Pro) His	879	Pro	Glu	ı Leı	ı Va:	1 Leu 880
ту	r Se	r Le	u Va	1 .Phe 88		l Leu	ı Phe	e Cys	890	o Gli	Lys	a Arg	Fy	8 Th:	r Ala
Me	t As	p Gl	n Th		p Glu	ı Ası	Lev	90!	e Pro	о Ту	r Gly	y Ala	a Ph 91	е Ту 0	r Gln
Ph	e Le	u Me 91		e Se	r Ar	g Se:	920	e Arg	g Gl	y G1	u Gli	и Ме 92	t Se 5	r Il	e Gly
Ly	s G1 93	n Hi O	s	•							·		٠	•	

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(74) Common Representative: BAYER HEALTHCARE AG; Law and Patents, Patents and Licensing, 51368 Leverkusen (DE).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, Cl, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 10 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REGULATION OF HUMAN TRANSIENT RECEPTOR POTENTIAL CHANNEL

(57) Abstract: Reagents which regulate human transient receptor potential channel and reagents which bind to human transient receptor potential channel gene products can play a role in preventing, ameliorating, or correcting dysfunctions or diseases including, but not limited to, urinary incontinence, overactive bladder, benign prostatic hyperplasia, lower urinary tract syndromes, and CNS disorders.



2003/087158

International Application No PCT/EP 03/03713

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According to	International Patent Classification (IPC) or to both national classification	on and IPC				
B. FIELDS S	SEARCHED	•				
Minimum do IPC 7	currentation searched (classification system followed by classification ${\sf G01N} {\sf C07K} {\sf C12Q}$	symbols)				
	ion searched other than minimum documentation to the extent that suc		urched			
	ata base consulted during the international search (name of data base ternal, WPI Data, PAJ	and, where practical, search terms used)				
C. DOCUME	NTS CONSIDERED TO BE RELEVANT					
Category °	Citation of document, with Indication, where appropriate, of the relevant	vant passages	Relevant to claim No.			
E	WO 03/064602 A (NEUHAUSSER WERNER; JULIUS DAVID (US); MCKEMY DAVID UNIV) 7 August 2003 (2003-08-07) the whole document	M D (US);	1-8			
P,X	P,X WO 02/101045 A (IRM LLC; NOVARTIS AG (CH); GANJU PAMPOSH (GB); BEVAN STUART (GB);) 19 December 2002 (2002-12-19) SEQ ID Nos 8 and 11					
P,X	WO 02/087608 A (BOEHRINGER INGELHEIM PHARMA ; KRESS MICHAELA (DE); HABERBERGER RAIN) 7 November 2002 (2002-11-07) claims					
P,X	WO 02/44210 A (SQUIBB BRISTOL MYE (US)) 6 June 2002 (2002-06-06) claims 17-20,25	RS CO	1-8			
l	-	/				
X Furt	her documents are listed in the continuation of box C.	X Patent family members are listed in	n annex.			
° Special ca	ategories of cited documents :	"T" later document published after the inte	rnational filing date			
"A" docum	ent defining the general state of the art which is not dered to be of particular relevance	or priority date and not in conflict with cited to understand the principle or the invention	the application but eory underlying the			
filing	document but published on or after the International date	"X" document of particular relevance; the c cannot be considered novel or cannot	be considered to			
which	ent which may throw doubts on priority claim(s) or is cited to establish the publication date of another on or other special reason (as specified) ent referring to an oral disclosure, use, exhibition or	involve an inventive step when the do "Y" document of particular relevance; the cannot be considered to involve an indocument is combined with one or more than the contract of the contract o	claimed invention ventive step when the ore other such docu-			
other	means ent published prior to the international filing date but than the priority date claimed	ments, such combination being obvior in the art. "&" document member of the same patent				
	actual completion of the international search	Date of mailing of the International sea	rch report			
	13 February 2004	1 5. 04. 2004				
Name and	mailing address of the ISA	Authorized officer				
	European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Routledge, B				
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International Application No
PCT/EP 03/03713

		PC1/EF 03/03/13
C.(Continua	tion) DOCUMENTS CONSIDERED TO BE RELEVANT	Relevant to dalm No.
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Leievani in dani ivo.
Х	WO 02/10391 A (CURTIS RORY A J ;MILLENNIUM PHARM INC (US)) 7 February 2002 (2002-02-07) claims 17-26	1-8
X	WO 02/10382 A (WISSENBACH ULRICH) 7 February 2002 (2002-02-07) claim 31 page 17, paragraph 6 - page 19, paragraph 1	1-8
Х	WO 02/04520 A (INCYTE GENOMICS INC) 17 January 2002 (2002-01-17) claims 19,20,22,23,25-27	1-8
X	WO 02/02633 A (INCYTE GENOMICS INC;TRIBOULEY CATHERINE M (US); RAUMANN BRIGITTE) 10 January 2002 (2002-01-10) claims 19,20,22,23,25-27	1-8
X	WO 02/00722 A (SILOS SANTIAGO INMACULADA; CURTIS RORY A J (US); MILLENNIUM PHARM) 3 January 2002 (2002-01-03) Seq ID No.5claim 2 page 137 - page 140	1-8
x	WO 02/00718 A (SILOS SANTIAGO INMACULADA; CURTIS RORY A J (US); MILLENNIUM PHARM) 3 January 2002 (2002-01-03) claims 17-35 page 2, line 34 - page 3, line 3 page 4, line 1 - line 29	1-8
х	WO 01/077331 A (MILLENIUM PHARMACEUTICALS INC; SILOS SANTIAGO INMACULADA (US); CUR) 18 October 2001 (2001-10-18) claims 10-22,28-30 page 3, line 15 - line 25 page 7, line 1 - line 19 page 8, line 17 - line 23	1-8
X	WO 01/068698 A (BOEHRINGER INGELHEIM) 20 September 2001 (2001-09-20) claims 43-57,68 page 28, line 25 - page 34, line 34	1-8
X	WO 01/062794 A (LORA JOSE M ; CURTIS RORY A J (US); GLUCKSMANN MARIA ALEXANDRA (US)) 30 August 2001 (2001-08-30) claims 17-30,37,38 page 7, line 10 - line 21 page 12, line 17 - line 25 page 13, line 11 - line 16	1-8
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International Application No
PCT/EP 03/03713

		PC1/EP 03/03/13
	Nion) DOCUMENTS CONSIDERED TO BE RELEVANT	Relevant to dalm No.
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevan in Claim NC
X	WO 01/046258 A (INCYTE GENOMICS INC; AZIMZAI YALDA (US); KHAN FARRAH A (US); REDDY) 28 June 2001 (2001-06-28) claims 19,20,22,23,25-27	1-8
X	WO 00/40614 A (BETH ISRAEL HOSPITAL ;SCHARENBERG ANDREW M (US)) 13 July 2000 (2000-07-13) claims 24,36,37	1-8
X	WO 00/04929 A (UNIV SOUTH ALABAMA) 3 February 2000 (2000-02-03) page 7, line 6 - line 12 page 15, line 12 - line 26	1-8
X	WO 99/09140 A (BRAKE ANTHONY (US); JULIUS DAVID (US); UNIV.CALIFORNIA(US); CATERINA M) 25 February 1999 (1999-02-25) claim 19	1-8
		·
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International application No. PCT/EP 03/03713

Box I	Observations where certain claims were found unsearchable (Continuation of Item 1 of Iirst sheet)
This Inte	mational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1.	Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2. X	Claims Nos.: 1-8 because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically: see FURTHER INFORMATION sheet PCT/ISA/210
з. 🗌	Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box ii	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This Inte	rmational Searching Authority found multiple inventions in this international application, as follows:
	see additional sheet
1.	As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2	As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
з. 🗌	As only some of the required additional search fees were timely pald by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. X	No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-8 (partially)
Remark	The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.

Continuation of Box I.2

Claims Nos.: 1-8

Given the breadth of the independent claims due to the definitions of the sequences which includes sequences of anything from 26% identity upwards, the initial phase of the search revealed a very large number of documents relevant to the issue of novelty. So many documents were retrieved that it is impossible to determine which parts of the claim(s) may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claim(s) is impossible. Consequently, the search has been restricted to methods of screening using SEQ ID No.12.

Present claims 1-4 relate to an extremely large number of possible methods. Support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT is not to be found, as the description merely represents a theoretical approach and does not exemplify the invention in practice. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely methods of screening using SEQ ID No.12.

Present claims 5-8 relate to a reagent and uses therefor defined by reference to a desirable characteristic or property, namely that the reagewnt has been identified using the screening methods of claims 1-4.

The claims cover all reagents having this characteristic or property, including known compounds (page 38 line 25) whereas the application provides does not provide support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for a single reagent as no specific reagents are identified. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product/compound/method/apparatus by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the use of SEQ ID No.12.

Other documents relating to disclosure concerning transient receptor potential channels have also been added to the search report in order to illustrate the state of the art. However the list is not exhaustive and further documents may become relevant when the subject matter of the claims has been amended to overcome the above objections.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8 (partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.12 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

2. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.13 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.14 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

4. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.15 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

5. claims: 1-8 (partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.16 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

6. claims: 1-8 (partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.17 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

7. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.18 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

8. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.19 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

9. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.20 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

10. claims: 1-8(partially)

Method of screening comprising a test compound with a polynucleotide for human transient receptor channel encoding the amino acid sequence SEQ ID No.21 or complement, derivative or fragment thereof, reagent so identified, composition containing said agent, use of composition comprising said agent.

11. claims: 1-8 (partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.1 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

12. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.2 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

13. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.3 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

14. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.4 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

15. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.5 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

16. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.6 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

17. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.7 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

18. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.8 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

19. claims: 1-8(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.9 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

20. claims: 1-18(partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.10 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

21. claims: 1-8 (partially)

Method of screening comprising contacting a test compound with a polynucleotide for human transient receptor channel comprising SEQ ID No.11 or complement, derivative or fragment thereof, reagent so identified, composition containing said reagent, use of composition comprising said reagent.

page 4 of 4

Information on patent family members

International Application No PCT/EP 03/03713

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 03064602	A	07-08-2003	WO US	03064602 2003219834		07-08-2003 27-11-2003
WO 02101045	A	19-12-2002	CA WO EP US	2450113 02101045 1399558 2003157633	A2 A2	19-12-2002 19-12-2002 24-03-2004 21-08-2003
WO 02087608	Α	07-11-2002	DE WO	10120834 02087608		07-11-2002 07-11-2002
WO 0244210	A	06-06-2002	AU CA EP US WO	3245602 2436941 1379652 2003027164 0244210	A1 A2 A1	11-06-2002 06-06-2002 14-01-2004 06-02-2003 06-06-2002
WO 0210391	A	07-02-2002	AU EP WO US US	8096901 1307555 0210391 2004058355 2002081658	A2 A2 A1	13-02-2002 07-05-2003 07-02-2002 25-03-2004 27-06-2002
WO 0210382	A	07-02-2002	AU CA WO EP JP	8763901 2417671 0210382 1366158 2004505617	A1 A2 A2	13-02-2002 07-02-2002 07-02-2002 03-12-2003 26-02-2004
WO 0204520	A	17-01-2002	AU CA EP WO	7323901 2415808 1313854 0204520	A1 A2	21-01-2002 17-01-2002 28-05-2003 17-01-2002
WO 0202633	A	10-01-2002	AU CA CA EP EP WO WO	6500201 7306901 2410084 2413128 1320548 1297014 0192304 0202633	A A1 A1 A2 A2 A3	11-12-2001 14-01-2002 06-12-2001 10-01-2002 25-06-2003 02-04-2003 06-03-2003 10-01-2002
WO 0200722	А	03-01-2002	AU EP WO US US	7024001 1294762 0200722 2003219806 2002156253	A2 A2 A1	08-01-2002 26-03-2003 03-01-2002 27-11-2003 24-10-2002
WO 0200718	A	03-01-2002	AU EP WO US	7145501 1307488 0200718 2002127671	A2 A2	08-01-2002 07-05-2003 03-01-2002 12-09-2002
WO 0177331	A	18-10-2001	AU EP WO US	5325801 1294872 0177331 2002197680	A1 A1	23-10-2001 26-03-2003 18-10-2001 26-12-2002

Information on patent family members

International Application No PCT/EP 03/03713

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0177331	A	US 2002035056 A1	21-03-2002
WO 0168698	A 20-09-2001	DE 10013296 A1 WO 0168698 A2 US 2003120049 A1	20-09-2001 20-09-2001 26-06-2003
WO 0162794	A 30-08-2001	AU 3859601 A WO 0162794 A2 US 2003219806 A1 US 2002142377 A1	03-09-2001 30-08-2001 27-11-2003 03-10-2002
WO 0146258	A 28-06-2001	AU 2736101 A CA 2395007 A1 EP 1257578 A2 JP 2004500814 T WO 0146258 A2	03-07-2001 28-06-2001 20-11-2002 15-01-2004 28-06-2001
WO 0040614	A 13-07-2000	AU 2055600 A CA 2360396 A1 EP 1141017 A2 JP 2002536966 T WO 0040614 A2	24-07-2000 13-07-2000 10-10-2001 05-11-2002 13-07-2000
WO 0004929	A 03-02-2000	AU 5229199 A WO 0004929 A1	14-02-2000 03-02-2000
WO 9909140	A 25-02-1999	AT 253111 T AU 742391 B2 AU 9115698 A CA 2298540 A1 DE 69819345 D1 EP 1009804 A1 JP 2001514879 T WO 9909140 A1 US 6335180 B1 US 2003049728 A1 AU 2466799 A CA 2309903 A1 DE 69910538 D1 EP 1047711 A1 JP 2002503451 T WO 9937675 A1	15-11-2003 03-01-2002 08-03-1999 25-02-1999 04-12-2003 21-06-2000 18-09-2001 25-02-1999 01-01-2002 13-03-2003 09-08-1999 29-07-1999 25-09-2003 02-11-2000 05-02-2002 29-07-1999